

Birds of prey and owls of the western and northern slopes of Mt Kilimanjaro, Tanzania

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Records of 49 species of birds of prey noted between Sanya Juu and Rongai on the western and northern slopes of Mt Kilimanjaro, Tanzania, are presented and their distribution on the mountain slopes related to their dietary preferences. New records for Kilimanjaro of Booted Eagle *Hieraaetus pennatus* and Bat Hawk *Macheiramphus alcinus* are reported. The unconfirmed presence of Mackinder's Eagle Owl *Bubo capensis mackinderi* in the alpine zone is discussed.

The birds of Mt Kilimanjaro have been studied for over a century, since H. H. Johnston made the first collection in 1884. A number of other collections were made between then and 1914 which resulted in the publication of several species lists (summarized by Cordeiro 1994). The first ecological studies of Kilimanjaro birds were made by Moreau, who published some valuable papers focusing especially on biogeographic aspects of species distributions (Moreau 1936, Moreau & Moreau 1939, Moreau 1944), with a later general Afromontane overview (Moreau 1966). Lamprey (1965) produced an account in popular style of the forest and alpine zone birds. King (1973) also described the altitudinal distribution of birds on the mountain. In recent years N. J. Cordeiro has carried out extensive research on the forest species, which has been the subject of several publications, including the most important summary of Kilimanjaro birds yet (Cordeiro 1994).

This paper is based on personal sightings of birds of prey and owls on the western and northern slopes of Kilimanjaro between 1990 and 1994, supplemented by the observations of several friends and the published literature. The estimations of abundance are subjective and personal; a quantified survey would be a most valuable exercise. My observations have been made while engaged on other activities and do not represent a specific study of the birds of prey.

The area covered lies between the townships of Sanya Juu and Rongai and is largely defined by the road linking them, although the records come from areas both above the road, to 4000 m, and below it, to approximately 1300 m. This broad band encompasses a very great diversity of terrain and habitats.

The lower elevations are characterized by *Acacia* savannah, with occasional rocky outcrops. At altitudes between 1300–1500 m a zone of cultivation begins. On the western slope this is dominated by large colonial-era arable farms, growing large acreages of wheat, barley and beans. Amongst these there are pockets of African smallholdings growing small plots of maize and beans as the principal crops. Within this zone a considerable area remains under semi-natural vegetation in the form of dry bushed grassland on steep hills, contour lines, abandoned fields and so on. I have termed this landscape the 'arable-bush mosaic'. A 7-km stretch of the northern slope is uncultivated and here natural vegetation stretches from the Amboseli basin to the limit of vegetation at 4500 m.

The montane forest zone starts at approximately 1800 m, above the cultivated land, and continues through several sub-types to the forest-heath boundary at around 2700 m. The heathland vegetation, which is dense at 2700 m, diminishes in stature with altitude, becoming truly alpine above 3000 m, giving way to alpine desert above 4200 m. On the western and northeastern slopes large areas of natural forest have been replaced by conifer plantations.

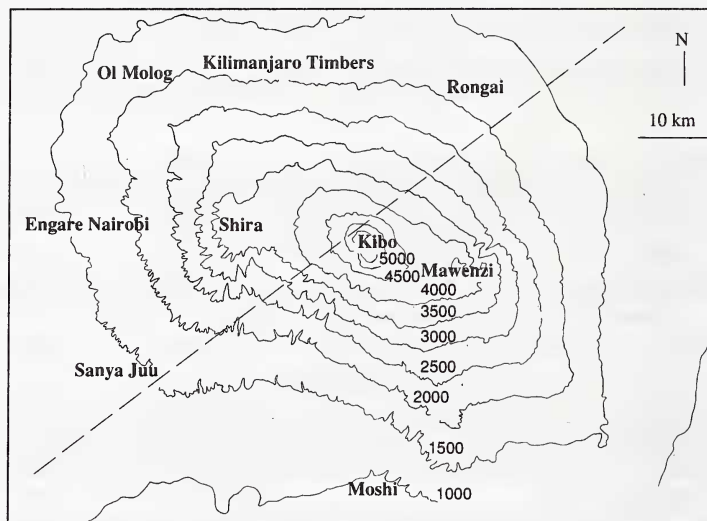


Figure 1. Sketch map of Kilimanjaro showing 500-m contours. The area covered in the paper is west of the dotted line

Species list

Nomenclature and sequence follow Britton (1980), with amendments from Turner *et al.* (1991).

Secretary Bird *Sagittarius serpentarius*

Common in arable and bushland where probably a breeding resident, but numbers seem to vary, with an influx from August onwards.

African White-backed Vulture *Gyps africanus*

Resident; breeding in montane forest to 2000 m on the northern slope. Congregates in large numbers (up to 40) on the carcasses of crop-raiding elephants, but usually the only vulture present.

Hooded Vulture *Necrosyrtes monachus*

Observed by Cordeiro (1994) at about 1900 m on the western slope; apparently scarce.

Lammergeyer *Gypaetus barbatus*

Breeding in the alpine zone. Adults and immatures may sometimes be seen scavenging in the area of Horombo hut at about 3650 m and has been filmed feeding on the Shira Plateau (Partridge Films/BBC: 'Islands in the African Sky', 1994). Nesting area not known, possibly on cliffs of western Kibo above the Shira Plateau, or on the Shira Ridge. In 1993 I found an ossuary on the Shira Cone at 3800 m. Also observed in 1994 on Mt Meru and Longido, and in 1992 lammergeiers were seen on Monduli Mountain (P. Morris, pers. comm.). Although it was first recorded from Kilimanjaro by Moreau (1936), Guest & Leedal (1954) failed to observe it during two months spent at high altitudes and King (1973) noted that it was scarce on Kilimanjaro; it is possible that at times birds move elsewhere and later recolonize the mountain from other areas.

Lammergeiers occasionally visit lower altitudes; one was seen at Simba Farm in 1990 (C. Allen, pers. comm.) and N.J. Cordeiro (pers. comm.) observed an individual scavenging at Ol Doinyo Sambu village on the north-western slope of Mt Meru.

Eurasian Marsh Harrier *Circus aeruginosus*

Winter and passage visitor to West Kilimanjaro arable land; never as common as Pallid and Montagu's Harriers.

Pallid Harrier *Circus macrourus*

Common winter visitor, October to April, to West Kilimanjaro arable land between October and April.

Montagu's Harrier *Circus pygargus*

Common winter visitor, as for Pallid Harrier, with adults and immatures being equally abundant. Both species 'quarter' arable fields flushing Harlequin Quail *Coturnix delegorguei* and Red-billed Quelea *Quelea quelea* which are caught and eaten on the wing (C. Stubbs, pers. comm. 1994).

African Marsh Harrier *Circus ranivorus*

Apparently an occasional visitor to West Kilimanjaro; observed in the arable bush-mosaic on 23 June 1990 after the departure of European migrants. N. J. Cordeiro observed an individual at a marsh near Sanya Juu 24 August 1994 (pers. comm.).

Harrier Hawk *Polyboroides typus*

Resident in mixed arable and bush country on West Kilimanjaro; recorded from open forest on the northern slope at 2000 m in 1992 and at 2300 m in 1994.

Brown Snake Eagle *Circaetus cinerascens*

The only record for the Kilimanjaro area is an individual observed at Sanya Juu on 19 August 1993 by N. J. Cordeiro (pers. comm.).

Short-toed Snake Eagle *Circaetus gallicus*

The race *C. g. pectoralis* (Black-chested Snake Eagle) is an uncommon resident in the arable-bush mosaic of West Kilimanjaro.

Bateleur *Terathopius ecaudatus*

Common resident, probably breeding, in bush and arable land on both northern and western slopes.

Shikra *Accipiter badius*

Resident in arable-bush mosaic; often seen flying very low above the road and darting into roadside vegetation after prey.

Great Sparrowhawk *Accipiter melanoleucus*

Uncommon resident in forest at 2000 m on the northern slope; it is also known from the Ol Molog area (C. Stubbs, pers. comm. 1994). Moreau & Moreau (1939) record it from ravines below the forest edge at Rongai.

Little Sparrowhawk *Accipiter minullus*

Uncommon resident of the forest edge and arable-bush mosaic, observed near Lerang'wa on the northern slope, and in farmland near Ol Molog, where it takes domestic chicks in the vicinity of habitation (C. Stubbs, pers. comm. 1994).

Rufous Sparrowhawk *Accipiter rufiventris*

Apparently common resident in *Podocarpus* and *Hagenia* forest between 2500–2700 m on the northern slope; difficult to observe as it tends to remain in the canopy. Cordeiro (1994) recorded this species at the lower edge of the forest (1500–1700 m) on both the southern and western slopes.

African Goshawk *Accipiter tachiro*

Resident in the forest on all slopes, but difficult to observe. At Kilimanjaro Timbers it was observed unsuccessfully chasing a Hamerkop *Scopus umbretta*, 23 June 1990. Cordeiro records (1994) that he has often caught this species in mist nets and notes that it had been overlooked by several previous authors.

Steppe Eagle *Aquila nipalensis*

Passage migrant, usually in November and December, but apparently not usually remaining for long. Up to 30 have been observed following the plough on the West Kilimanjaro arable farms.

Tawny Eagle *Aquila rapax*

Common breeding resident throughout the western and northern slopes below the forest; sometimes feeds on carrion with Steppe Eagles and vultures.

Wahlberg's Eagle *Aquila wahlbergi*

A solitary individual was watched on 7 September 1991 on West Kilimanjaro by Cordeiro (1994), to 2000 m.

Augur Buzzard *Buteo augur*

Abundant breeding resident in the arable-bush mosaic, often seen perched on telephone poles; melanistic birds are frequent. It is a scarce resident in open forest at 2000 m on the northern slope, probably breeding, although a solitary bird has been observed to inhabit the same, rather restricted area for four years, using regular perches. This individual has been observed to hunt *Rana* and *Xenopus* frogs in a small

marsh. At higher levels it is also present at low densities up to about 4200 m on the western slope of Kibo (King 1973 and pers. obs.).

[Common Buzzard *Buteo buteo vulpinus*

The only record of this migratory species in the Kilimanjaro area is a specimen collected by Kittenberger at Kibosho, outside the area covered by the present paper, 6 November 1904 (Kittenberger 1958). It is possible that the species may still occur occasionally; large numbers have recently been seen on passage in the Tarangire–Lake Manyara area some 150 km to the southwest (C. Foley, pers. comm. 1994) and it also occurs in small numbers in the Ngulia area of Tsavo West National Park, Kenya, some 100 km due east (G. C. Backhurst, pers. comm.).

Mountain Buzzard *Buteo oreophilus*

Common breeding resident between 2100 and 2700 m on the northern slope and probably fairly generally distributed at these altitudes. King (1973) believed it to be scarce on the western slope. On 24 June 1994 I observed a Mountain Buzzard eat the eggs from a nest of an Olive Pigeon *Columba arquatrix* in *Podocarpus* forest at 2500 m on the northern slope.

Booted Eagle *Hieraaetus pennatus*

One observed by C. Stubbs on several occasions in November 1993, on farmland near Ol Molog. This is the first record for Kilimanjaro.

African Hawk Eagle *Hieraaetus spilogaster*

Rare in the cultivated zone; one sighting only, from West Kilimanjaro 4 February 1990, but Cordeiro (1994) has also recorded it from 1700 m on the western slope, flying over the forest.

Lizard Buzzard *Kaupifalco monogrammicus*

N.J. Cordeiro (pers. comm.) considers this species to be reasonably common in cultivated areas near Sanya Juu, where he observed it in 1991 and 1993.

Long-crested Eagle *Lophaetus occipitalis*

Common breeding resident in the arable-bush mosaic and in the Londorossi plantation area to 2600 m (Cordeiro 1994); often seen perched on telephone poles. Also apparently resident in open forest at 2000 m on the northern slope.

Gabar Goshawk *Micronisus gabar*

Common in bush country below the forest; a melanistic individual was observed in October 1993 near Ol Molog (C. Stubbs, pers. comm.). An individual was briefly observed on 1 February 1994 at 2000 m in a clearing in the forest of the northern slope. That this species has a tendency to wander is further suggested by Moreau & Moreau (1939) who discuss a specimen collected by O. Neumann at 2700 m on the southern slope.

Pale Chanting Goshawk *Melierax poliopterus*

Apparently a common resident in *Acacia* bush below about 1600 m on both northern and western slopes.

Martial Eagle *Polemaetus bellicosus*

Observed near Ol Molog in an area of small hills where it was believed to have been hunting guineafowl (C. Stubbs, pers. comm. 1994). Probably an occasional visitor to the area.

Crowned Eagle *Stephanoaetus coronatus*

Common breeding resident in forest between 1900 and 2400 m, coinciding with the areas of highest monkey density. Believed to prey on Blue Monkey *Cercopithecus mitis*, Black and white Colobus *Colobus guereza*, Tree Hyrax *Dendrohyrax validus* and Red Duiker *Cephalophus natalensis* (Cordeiro 1992, and pers. obs.). Often seen circling overhead, usually in pairs, making the distinctive calls at which the monkeys rapidly remove themselves from the canopy. Also to be seen in spectacular display flights throughout the year.

Cuckoo Hawk *Aviceda cuculoides*

Seen twice, 8 and 11 December 1991 (Cordeiro 1994) in forest at 1750 m on the western slope.

Black Kite *Milvus migrans*

Common resident around human settlements, for example at Engare Nairobi. Migrants may also occur as large flocks of kites have been observed at Moshi, apparently on migration (e.g., hundreds, with Pied Crows *Corvus albus*, 6 January 1990).

Black-shouldered Kite *Elanus caeruleus*

Common breeding resident in arable-bush mosaic. Often observed on telephone wires and poles.

Bat Hawk *Macheiramphus alcinus*

Apparently the first record for Kilimanjaro was a sighting made in open forest at 2000 m (northern slope) at dusk on 16 November 1990; in the same area sightings also occurred at dusk on 11–12 September 1993. Its status is hard to judge; possibly it is only an irregular visitor. N. J. Cordeiro (pers. comm.) has seen this species in Moshi in July 1993 and June–July 1994.

Eastern Red-footed Falcon *Falco amurensis*

A passage migrant, seen annually in varying numbers and proportions in flocks with other species. Believed to have been present in small numbers in a large flock of Lesser Kestrels and hobbies on West Kilimanjaro in November 1993; in early April 1994 large flocks of Eastern Red-Footed Falcons were present near Ol Molog, with only a few Lesser Kestrels among them (C. Stubbs, pers. comm. 1994). Fuggles-Couchman (1984) records a male collected at 1650 m at Ol Molog, 21 January 1946.

Lanner Falcon *Falco biarmicus*

Not infrequent in northern Tanzania but apparently only noted in recent years in the Kilimanjaro area by N. J. Cordeiro, who observed a pair at Londorossi (2100 m) on 26 September 1991. He believed that they might be resident there (Cordeiro 1994). Fuggles-Couchman (1984) observed single birds in arable land near Ol Molog in April 1959.

Saker Falcon *Falco cherrug*

Britton (1980) notes that the only Tanzanian record is of a sighting at Engare Nairobi on 27 February 1957.

African Hobby *Falco cuvieri*

Noted on several occasions at all times of year at Simba Farm; possibly resident.

Taita Falcon *Falco fasciinucha*

Britton (1980) records this species from Kilimanjaro but the basis for this statement is unknown (D. A. Turner, pers. comm.).

Lesser Kestrel *Falco naumanni*

Common passage migrant in the arable-bush mosaic, often in flocks of several tens of birds; regularly seen perched on telephone wires, or hunting over freshly cultivated ground.

Peregrine Falcon *Falco peregrinus*

Has been observed on several occasions above open forest at 2000 m, and on 30 November 1993 stooping (and missing) at a Speckled Pigeon *Columba guinea* close above habitation. Also recorded from near Ol Molog (C. Stubbs, pers. comm.). Probably a scarce resident.

Hobby *Falco subbuteo*

A few were present in a large mixed flock of Lesser Kestrels and Eastern Red-footed Falcons on West Kilimanjaro in November 1993; presumably on passage.

Kestrel *Falco tinnunculus*

Occasionally observed on West Kilimanjaro; probably a scarce resident. Also known to occur and believed to breed in rocky country north of Mt Meru. It is also likely to occur on passage and may have been overlooked amongst Lesser Kestrels.

Pygmy Falcon *Polihierax semitorquatus*

Has been observed on the plains west of Kilimanjaro, where it may be a breeding resident.

Barn Owl *Tyto alba*

Abundant resident in the arable areas of West Kilimanjaro, often breeding in house roof cavities. In the dry area to the west of Kilimanjaro it breeds in caves on the small hill Ngasurai.

African Marsh Owl *Asio capensis*

Common resident in the arable-bush mosaic where it is believed to breed in the crops. Often seen squatting in the road at night, an often fatal habit.

Spotted Eagle Owl *Bubo africanus*

Resident in the Ol Molog area, but abundance not known. It is also found in Moshi.

[Mackinder's Eagle Owl *Bubo capensis mackinderi*

The first record of a large owl in the moorland and alpine zone was made during a University of Sheffield expedition in 1953 (Guest & Leedal 1954), when an unidentified eagle owl was seen and heard on Mawenzi (no altitude supplied) and the Lent Valley (4360 m). N. J. Cordeiro (pers. comm.) collected owl pellets at 3850 m in the Barranco Valley in 1984. In 1993 members of, coincidentally, another University of Sheffield expedition, reported an eagle owl flying overhead at dusk while camped at 3000 m, just below the Shira Plateau, during July. Pellets and droppings, believed to be from an owl were also seen on the Shira Ridge at over 3650 m (J. Colman, pers. comm.). The species has yet to be confirmed, but the altitude and the noted hooting at dusk (a conspicuous affirmation of their presence in the Teleki Valley of Mt Kenya (pers. obs.)), would strongly suggest that the Kilimanjaro birds are also Mackinder's Eagle Owls.

Verreaux's Eagle Owl *Bubo lacteus*

Cordeiro (1994) records this species from below the forest on the western and southern slopes; it is common in Moshi and I reared an individual at Kilimanjaro Timbers which had been obtained from children there. The bird became free-ranging and was regularly mobbed by Peregrines and Augur Buzzards, taking refuge in dense foliage.

African Wood Owl *Strix woodfordii*

Heard calling every night and sometimes at Kilimanjaro Timbers in forest to at least 2200 m.

[White-faced Scops Owl *Otus leucotis*

No scops owls have as yet been noted from western or northern Kilimanjaro, but this species may occur here as an injured bird believed to be of this species was found in Moshi in 1993 and Britton (1980) records it from Amboseli.

Discussion

The above list discusses 52 species of birds of prey and owls, of which three species—Common Buzzard, Mackinder's Eagle Owl and White-faced Scops Owl—require strict confirmation in the defined area. To an observer accustomed to northern Europe, where the sighting of any bird of prey is considered an event, this total seems remarkable for so small an area. That it is not unusual in East Africa may be confirmed by an examination of the records for the Mkomazi Game Reserve situated approximately 120 km east of Kilimanjaro, where 38 species of birds of prey have been confirmed and a further 13 are believed to occur (Coe 1993, Mkomazi '93 1993). The total in Lake Manyara National Park is even greater (H. Prins, pers. comm. 1994), reflecting the great habitat diversity and location of this park. By contrast, the relatively uniform plains around Nairobi were found to have only 22 species of birds of prey (Sorley & Andersen 1994). The distribution of birds of prey in East Africa seems to be governed by the presence of suitable habitat and prey species. For example,

Verreaux's Eagle *Aquila verreauxii* is present on Mt Kenya and at Mkomazi where diurnal Rock Hyrax *Heterohyrax brucei*, its main prey species, are abundant; it is absent from Kilimanjaro where only nocturnal tree hyraxes are present.

The Afromontane ecosystem is well known to comprise a series of vegetation zones (e.g., Hedberg 1951) and one of the most striking things to emerge from an examination of the list of the 50 species of birds of prey recorded from northern and western Kilimanjaro is their distribution in relation to the different vegetation zones. The arable-bush mosaic emerges as a habitat favoured by birds of prey, with no fewer than 35 species regularly occurring here. The other habitat-types are inhabited by far fewer species. A few species, such as the Augur Buzzard, occur regularly in several different zones, but the majority are quite habitat-specific.

That the arable-bush mosaic is favoured is no coincidence. The agricultural activities encourage large populations of rodents, game and passerine birds, which are assisted by the refugia of natural vegetation. This abundance of prey species is also exploited by a number of small carnivorous mammals including several mongooses, Wild Cat *Felis silvestris* and Serval *Leptailurus serval*, all of which are common in this zone (Grimshaw *et al.* in prep). The open terrain must also favourably affect the visibility and ease of capture of prey species. The birds of prey noted from the arable-bush mosaic may be considered to be generally predatory on rodents and small birds, although a few species, such as the Secretary Bird (which largely feeds on snakes) and the Harrier Hawk (eggs and nestlings) are more specialized in their requirements. Many of the birds of prey of the arable-bush mosaic are migrants or vagrants, but when these species are present the density of birds of prey is extremely high.

Inhabitants of the other vegetation zones are typically more specialized in their requirements. The two resident species confined to dry bush country, Pale Chanting Goshawk and Pygmy Falcon, are both recorded to feed largely on lizards and insects (Mackworth-Praed & Grant 1952).

In the forest zone three species of *Accipiter* snatch birds within the forest, while the Peregrine hunts birds above the canopy. The Bat Hawk is another aerial hunter. The Mountain Buzzard is said to feed largely on chameleons (Mackworth-Praed & Grant 1952, Williams & Arlott 1980) although it may also take small rodents (Maclean 1988). The Crowned Eagle hunts the larger forest mammals, especially monkeys (Mackworth-Praed & Grant 1952, Cordeiro 1992). Of the strict forest residents only the Wood Owl is a regular feeder on small mammals (although N. J. Cordeiro (pers. comm.) believes it may also take small birds); the generalist species occurring in the forest also take rodents.

In the alpine zone of Mt Kenya, Mackinder's Eagle Owl is believed to take small mammals and birds (Mackworth-Praed & Grant 1952), and on Kilimanjaro, if it indeed exists here, it would presumably prey on the abundant mice of this zone (Shore & Garbett 1991). The other predominantly alpine species, the Lammergeyer, is noted as a feeder on bones (Maclean 1988) and the low densities of this species on Kilimanjaro and other mountains is presumably a function of the scarcity of such food. However, on Kilimanjaro this diet is supplemented by feeding at rubbish pits near the tourist huts.

Sorley & Andersen (1994) have documented the significantly greater density of birds of prey within Nairobi National Park than outside it, which they believe reflects differing land-use practices in the two areas. For the area outside the park they cite direct persecution of birds of prey, together with the more insidious effects of habitat change and the usage of agricultural toxins as possible reasons for the reduced density of birds of prey. This is in direct contrast to the situation prevailing on western Kilimanjaro where the farming areas support both a wide diversity and high density of carnivorous animals of all kinds. A possible explanation of this difference is that farming in the area described by Sorley & Andersen is undertaken by small-scale cultivators, while on Kilimanjaro the areas most favoured are on large-scale, European-style arable farms with very low human population density, leading to less direct conflict. The poor economic situation in Tanzania has, until recently, largely minimized application of agricultural toxins, which may also be a factor in encouraging high prey populations. Some West Kilimanjaro farmers are now increasing their use of agricultural chemicals, with as yet unknown effect.

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